Application No. 10/069,912
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AMENDMENT TO THE CLAIMS

1. (Currently Amended) A fuel reformer vessel for reforming a hydrocarbon base fuel and water into a hydrogen rich gas ~~with~~ comprising a reformer catalyst filled portion, wherein a Cr oxide layer is formed on at least a part of a surface of a steel material, wherein said fuel reformer vessel is formed of a material comprising the steel material, and said surface of the steel material ~~being~~ is under an oxidative atmosphere by water vapor.

2. (Previously Presented) The fuel reformer vessel of claim 1, wherein said Cr oxide layer is formed on a surface of a fuel combustion gas passage side thereof.

3. (Previously Presented) The fuel reformer vessel of claim 1, wherein said Cr oxide layer is formed on a surface of a mixture gas passage from a fuel supply portion for supplying the reformer with mixture gas of raw fuel and water for reforming to the reforming catalyst filled portion thereof.

4. (Currently Amended) The fuel reformer vessel of claim 1, wherein said Cr oxide layer is formed on a surface of a fuel combustion gas passage side thereof and ~~also~~ on the surface of the mixture gas passage from a fuel supply portion for supplying the reformer with mixture gas of raw fuel and water vapor for reforming to the reforming catalyst filled portion thereof.

5. (Previously Presented) The fuel reformer vessel of claim 1, wherein an average thickness of said Cr oxide layer is 5 to 100 μm.

6. (Previously Presented) The fuel reformer vessel of claim 1, wherein said Cr oxide layer is formed on said surface of the steel material by heat treating the reformer vessel under an oxidizing atmosphere thereby to convert Cr to Cr oxide after forming thereon a thin film containing Cr in a higher concentration than that of a base material thereof.

7. (Currently Amended) A ~~manufacturing~~ method of manufacturing a fuel reformer vessel for reforming a hydrocarbon base fuel and water into a hydrogen rich gas with reformer catalysts filled, said method comprising the steps of:

forming a Cr oxide layer on at least a part of a surface of raw steel material by heat treating said raw steel material under an oxidizing atmosphere of 600 to 1000°C ~~.~~, said surface of the steel material being under an oxidative atmosphere by water vapor;

manufacturing a vessel for the fuel reformer by using said raw steel material on which the Cr oxide layer is thus formed; and

filling thus manufactured vessel with a reforming catalyst thereby to produce the fuel reformer vessel.

8. (Currently Amended) A ~~manufacturing~~ method of manufacturing a fuel reformer vessel for reforming a hydrocarbon base fuel and water into a hydrogen rich gas with reformer catalysts filled,

said method comprising the steps of:

manufacturing a vessel for the fuel reformer by using raw steel material;

forming a Cr oxide layer on at least a part of a surface of the raw steel material by heat treating in an oxidizing atmosphere of 600 to 1000°C +, said surface of the steel material being under an oxidative atmosphere by water vapor; and

filling said vessel with a reforming catalyst thereby to produce the fuel reformer.

9. (Currently Amended) A ~~manufacturing~~ method of manufacturing a fuel reformer vessel for reforming a hydrocarbon base fuel and water into a hydrogen rich gas with reformer catalysts filled, said method comprising the steps of:

forming a Cr oxide layer on at least a part of a surface of a steel material for making a fuel reformer vessel by heat treatment of 350 to 650°C + under an oxidizing atmosphere to convert Cr to Cr oxide after forming thereon a thin film containing Cr in a higher concentration than that of a base material thereof, said surface of the steel material in the fuel reformer vessel being under an oxidative atmosphere by water vapor;

manufacturing the vessel for the fuel reformer using said raw steel material on which said Cr oxide layer is thus formed thereon; and

filling thus manufactured vessel with a reforming catalyst thereby to produce the fuel reformer vessel.

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10. (Currently Amended) A ~~manufacturing~~ method of manufacturing a fuel reformer vessel for forming a hydrocarbon base fuel and water into a hydrogen rich gas with reformer catalysts filled, said method comprising the steps of:

forming a thin film containing Cr in a higher concentration than that of a base material thereof on at least a part of a surface of raw steel material, said surface of the steel material being under an oxidative atmosphere by water vapor;

thereafter forming a Cr oxide layer on the surface of said raw steel material by heat treating said raw steel material under an oxidizing atmosphere of 350 to 650°C ~~.~~ to convert Cr to Cr oxide;

manufacturing the fuel reformer vessel by using said raw steel material on which said Cr oxide layer is thus formed; and

filling thus manufactured vessel with a reforming catalyst thereby to produce the fuel reformer.

11. (Canceled)

12. (Canceled)

13. (Canceled)

14. (Canceled)

15. (Canceled)

16. (Canceled)

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17. (Canceled)

18. (Currently Amended) The ~~manufacturing~~ method of manufacturing a fuel reformer of any one of claims 7 to 10, wherein an average thickness of said Cr oxide layer is 5 to 100 μm.